at least one synchronization agent (e.g., abscisic acid or gibberellin) (synchronization medium 3 and 6 respectively), or the addition of both an absorbent composition (e.g., activated charcoal) and a combination of synchronization agents (abscisic acid and gibberellin) (synchronization medium 7) resulted in more uniformity in embryo size (i.e., a synchronized culture) than cultures that did not contain an absorbent composition and at least one synchronization agent (control medium 1, 2, 4, and 5).

Applicants agree with the Examiner's statement in the Examiner's interview summary with regard to the claimed method that "the absorbent composition is very important, as shown on page 19 of the specification." However, with regard to the Examiner's statement, "The synchronization medium, which produces the result claimed is the synchronization medium 7," applicants would like to clarify, as described in the specification and noted during the interview, that each of synchronization medium 3, 6, and 7 successfully produced the result claimed (i.e., synchronized cultures). Further, it is noted that the Examiner's statement in the interview summary that the "synchronization medium contains 250 mg/L of activated charcoal, 10 mg/L abscisic acid and 10mg/L gibberellin GA4/7, it is only at this concentration of the three products that the synchronization medium produces the results claimed" is incorrect. Rather, as noted by applicants during the interview and described in the specification, synchronization medium 3, 6, and 7, which contain various amounts of the absorbent composition and synchronization agents, each successfully produced the result claimed.

As stated in the Examiner's interview summary, applicants also noted during the interview that another important difference between the Pullman reference and the claimed invention is that the claimed invention specifies that the embryos are cultured in the synchronization medium for a period from one to two weeks. In contrast, Pullman teaches

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incubation of embryos in singulation medium (without an absorbent composition) for a time period of at least three weeks.

The Examiner agreed during the interview that Pullman et al. and Gupta et al. did not appear to teach the use of an absorbent composition in the singulation medium, but the Examiner noted that another search would have to be conducted.

The Rejection of Claims 1-13, 17-19, 21, and 23–26 Under 35 U.S.C. § 103(a) as Being Unpatentable Over U.S. Patent No. 5,294,549 (Pullman et al.) in View of U.S. Patent No. 5,563,061 (Gupta et al.)

Claims 1-13, 17-19, 21, and 23-26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,294,549 (Pullman et al.) in view of U.S. Patent No. 5,563,061 (Gupta et al.). Applicants respectfully traverse this ground of rejection for at least the following reasons.

As summarized above, during the interview with Examiner Para on May 26, 2010, applicants noted that a key difference between the claimed invention and U.S. Patent No. 5,294,549 (Pullman et al.) is that the singulation medium of Pullman, used to singulate Douglas-fir embryos, does not contain any absorbent composition. For example, see the description of "Stage III Singulation" medium in Table 2 of Pullman, which does not contain activated charcoal. In sharp contrast, the synchronization medium used in the claimed method requires an absorbent composition. As described in the specification at page 18, line 3, to page 19, line 31, the inventors discovered through experimentation that the addition of both an absorbent composition (e.g., activated charcoal) and at least one synchronization agent (e.g., abscisic acid or gibberellin) (synchronization medium 3 and 6 respectively), or the addition of both an absorbent composition (e.g., activated charcoal) and a combination of synchronization

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agents (abscisic acid and gibberellin) (synchronization medium 7) resulted in more uniformity in embryo size (i.e., a synchronized culture) than cultures that did not contain an absorbent composition and at least one synchronization agent (control medium 1, 2, 4, and 5).

The teachings of U.S. Patent No. 5,563,061 (Gupta et al.) do not cure the deficiencies of Pullman et al. The singulation medium of Gupta et al., used to singulate Douglas-fir embryos, does not contain any absorbent composition. For example, see the description of "Stage IV Singulation" medium in Table 2 of Gupta, which does not contain activated charcoal.

It is further noted that Pullman does not teach or suggest cultivating pre-cotyledonary pine embryogenic cells for a period from one week to two weeks in, or on a synchronization medium, as recited in Claim 1, step (b). In contrast to the claimed invention, Pullman discloses a culturing step referred to as "singulation" for Douglas-fir. See Pullman et al. at Col. 8, lines 18–21. Pullman et al. teaches the transfer of pre-cotyledonary Douglas-fir somatic embryos from a maintenance medium to a singulation medium for at least three weeks, followed by transfer to a development medium. As described in Examples 1–7, which are directed to methods for improving Douglas-fir embryo development, "Late stage Douglas-fir proembryos were singulated in a three step liquid shake culture as outlined above." Example 2 at Col. 15, line 68, to Col. 16, line 2. As described in Example 1, a preferred schedule for the singulation step in Douglas-fir is "one week on a medium containing 10mg/L ABA, a second week on a medium containing 5/mg/L ABA, and a third week on a medium also with 5mg/L ABA." Col. 15, lines 10–27.

Gupta et al. does not cure the deficiency of Pullman et al. It is noted that Gupta does not teach or suggest cultivating pre-cotyledonary pine embryogenic cells for a period from one week to two weeks in, or on a synchronization medium, as recited in Claim 1, step (b). Rather, in contrast to the claimed invention, Gupta et al. teaches that Douglas-fir requires an intermediate

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singulation culturing step between early stage embryo growth and the final development stage due to the formation of tight clusters of embryos. As described in Gupta, singulation is carried out in a series of liquid shake cultures lacking auxins and cytokinins but which have exogenous abscisic acid added as a necessary new hormone. Gupta at Col. 8, lines 4–9.

In order to establish a *prima facie* case of obviousness, all of the claimed elements must be found in the prior art. See M.P.E.P. § 2143.

As discussed *supra*, both Pullman and Gupta teach a culturing step referred to as "singulation" for Douglas-fir in which pre-cotyledonary Douglas-fir somatic embryos transfer from a maintenance medium to a singulation medium for at least three weeks, followed by transfer to a development medium. Neither Pullman nor Gupta teach or provide any suggestion regarding culturing pre-cotyeldonary pine Embryogeny cells in synchronization medium for from one to two weeks, as recited in step (b) of Claim 1. Further, the singulation media described in Pullman and Gupta does not contain any absorbent composition, as required by the claimed invention.

Accordingly, because neither of the cited references provides any teaching regarding the synchronization of pre-cotyledonary pine embryogenic cells, and in particular, the cultivation of pre-cotyledonary pine embryogenic cells for a period of one to two weeks in synchronization medium comprising an absorbent composition as claimed, the cited references alone or in combination do not teach or suggest every element of Claim 1. Therefore, applicants submit that the Examiner has not established a *prima facie* case of obviousness because the Pullman and Gupta references, alone or in combination do not teach or suggest all the elements of Claim 1.

Accordingly, Claim 1 and dependent Claims 2–13, 17–19, 21, and 23–26 are not obvious over the cited references. Withdrawal of the rejection is respectfully requested.

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Conclusion

Applicants believe that Claims 1–13, 17–19, 21, and 23–26 are in condition for allowance. Reconsideration and favorable action is requested. The Examiner is further requested to contact the applicants' representative at the number set forth below to discuss any issues that may facilitate prosecution of this application.

Respectfully submitted,

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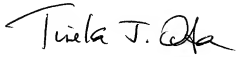

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